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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WINTER, GENTLE E

ART UNIT PAPER NUMBER

1746

DATE MAILED: 01/30/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/686,773

Applicant(s)

RACETTE ET AL.

Examiner

Gentle E. Winter

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-58 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/23/2002 has been entered.

Specification

2. The abstract of the disclosure is objected to because it exceeds 150 words. Correction is required. See MPEP § 608.01(b).

Invitation

3. Applicant is cordially invited to contact the Office and discuss the issues raised with respect to this Official action if applicant feels that such a discussion would be helpful in distinguishing the instant application from the prior art of record.

Response To Remarks

4. I. Claim Rejection Under 35 USC §102(b) -- Maintained

5. Claims 1, 2, 3, 11-18, 33, 42-49, 57, and 58 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,966,981, by Schultz (the '981 patent). Applicant traversed the rejection and argued:

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As the claims 1, 2, 3, 11-18, 33, 42-49, 57, and 58 now stands in front of the Patent Office, they claim, in one aspect, a process for cleaning substrates with an organic solvent in absence of liquid carbon dioxide; and removing the organic solvent from the substrates using a pressurized fluid solvent. The organic solvent of the present claimed invention is a glycol ether, and when the pressurized fluid solvent is liquid carbon dioxide it is under a pressure of between approximately 600 pounds per square inch to approximately 1050 pounds per square inch.

The '981 patent teaches a process of preparing a food product *** by separating the oil from the protein and carbohydrates prior to processing. (See, for example, the '981 patent, column 2, lines 54 to 56). The '981 patent states:

To prepare agricultural products for food and feed use, it is common to extract the oil with hexane or similar organic solvent.

The '981 patent, column 1, lines 17-19. The organic solvents taught in the process of the '981 patent include, organic solvents similar to hexane, including organic solvents having 1 to 6 carbons. Examples provided include:

[H]ydrocarbons such as propane, butane, pentane, and hexane; alcohols such as methanol, ethanol, propanol, isopropanol, butanol, pentanol, and hexanol; ketones such as acetone and methyl ethyl ketone; ethers such as diethyl ether; ether-alcohols such as ethylene glycol monomethyl and monoethyl ether; halogenated hydrocarbons such as chloroform, ethylene dichloride, perchloroethylene, and the like.

However, the '981 patent also does not teach a process for cleaning substrates by cleaning the substrates with an organic solvent in the absence of liquid carbon dioxide and when the pressurized fluid solvent is liquid carbon dioxide it is under a pressure of between approximately 600 pounds per square inch to approximately 1050 pounds per square inch.

The arguments fail to point to any specific element not found in the '981 patent, and seemingly acknowledge, albeit tacitly, the presence of everything but the recited pressure of the liquid carbon dioxide. The last paragraph above, is parsed and addressed in detail below:

However, the '981 patent also does not teach a process for cleaning substrates

The substrate is the food. Nothing in the claim precludes food from being the substrate.

by cleaning the substrates with an organic solvent in the absence of liquid carbon dioxide

The patent does teach the use of an organic solvent, explicitly disclosed to be a diethyl ether.

and when the pressurized fluid solvent is liquid carbon dioxide it is under a pressure of between approximately 600 pounds per square inch to approximately 1050 pounds per square inch.

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The reference teaches a pressure of 65-75 atm. This translates to about 955 to 1100 psi, which falls squarely with the disclosed pressure. See e.g. column 3, line 16 *et seq.* For this reason it is not clear how the claim is not properly anticipated.

It is noted that applicant's representative indicated that he may incorporate some language expressly excluding food articles which would seemingly destroy the anticipatory nature of the document used in the rejection. However, applicant is put on notice that such an amendment will need to find support in the specification as originally filed and, even with such an amendment, if such could be properly made, the reference will still seemingly support an obviousness rejection, in that the patent is unambiguous in its disclosure of "process for removing residual solvent from materials containing the same which involves extracting the material with liquid carbon dioxide" (explicitly disclosed to be within the pressures disclosed in the amended claims).

6. Further, applicant took the position:

As the '981 patent fails to disclose each and every element of the present claimed invention as arranged in the claims, anticipation cannot be found.

As set forth above, this examiner cannot agree with the above statement. Each and every element is identically disclosed, as set forth above and the arrangement is wholly identical to the claimed invention. If the argument is that an exemplary embodiment identically disclosing the invention is lacking, this view is well taken. If applicant were to narrow the organic solvent to a specific organic solvent, seemingly the anticipation rejection would then need to be withdrawn, potentially in favor of a obviousness rejection.

7. Finally, applicant remarked:

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Furthermore, the courts have stated that “we do not think that the general disclosure of [a reference] can be considered anticipatory of a specific limitation not disclosed merely because the general will include the specific.” In re Jacobson 160 USPQ 795, 800 (CCPA 1969). Therefore, reconsideration and withdrawal of this 35 U.S.C. §102(b) rejection of claims 1,2,3, 11-18,33,42-49,57, and 58 is respectfully requested.

Contextually, it is noted that the court in In re Jacobson acknowledged that the appellant appeared to be correct in contending that neither reference “discloses vinyl emulsion polymerizates, even though polyvinyl thermoplastics are disclosed.” *** “we do not think that the general disclosure of [reference] can be considered anticipatory of a specific limitation not disclosed merely because the general will include the specific. We hold, therefore, that the section 102 rejection of claims *** cannot be sustained, relegating us to the section 103 rejection”. Naturally, the current situation is distinguishable, in that the reference in this case identically discloses the claimed “diethyl ether”. The difference between “vinyl emulsion polymerizates” and “polyvinyl thermoplastics” is not analogous to the diethyl ether and broad class of diethyl ethers claimed.

8. The rejection is maintained.

9. **IIa RE: Claims 2-32, 34-49, and 51-56 Rejected Under 35 USC §103(a) –Withdrawn**

10. Claims 2-32, 34-49, and 51-56 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. 6,280,481 to Storey-Laubach *et al.* (‘481) in view of *SPIE*

Micromachining and Microfabrication, Oct.1996, to Dyck, *et al.* (“Article”). Applicant argued:

It is well established that the burden of establishing a *prima facie* case of obviousness lies with the Examiner.

In view of the amendments and remarks presented herein, Applicants respectfully submit that a *prima facie* case of obviousness has not been established. As taught by the present invention, in one aspect, Applicants’ claim a process for cleaning substrates with an organic solvent in absence of liquid carbon dioxide; and removing the organic solvent from the substrates using a pressurized fluid solvent. The organic solvent of the present claimed invention is a glycol ether, and when the pressurized fluid solvent is liquid carbon

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dioxide it is under a pressure of between approximately 600 pounds per square inch to approximately 1050 pounds per square inch.

Article teaches a method of cleaning cantilevers and engines after oxide wet etching by first rinsing in deionized water followed by rinsing in pure methanol or acetone. Specifically, the Article teaches the use of supercritical carbon dioxide to dissolve and remove solvents from a pressure vessel: "Liquid CO₂ kept above the critical pressure (1073 psia) [is] used to dissolve and remove methanol (MeOH) from a pressure vessel containing Micromachined structures." (See, Article, page 3, first full paragraph).

11. Applicant has distinguished the present invention over the 6,280,481 to Storey-Laubach *et al.* ('481) in view of *SPIE Micromachining and Microfabrication*, Oct. 1996, to Dyck, *et al.*

The primary reference does not teach the use of non-supercritical carbon dioxide. In fact, applicant's statements that the prior art requires "supercritical carbon dioxide at above 1073 psia." And "Article also specifically calls for a pure solvent such as MeOH or acetone, not a glycol ether of the present invention that comprises less than 50% by weight water." Are meaningful in construing the claim, especially in light of the following, additional, asserted limitations:

Article does not teach or suggest a method where when the pressurized fluid solvent is liquid carbon dioxide it is under a pressure of between approximately 600 pounds per square inch to approximately 1050 pounds per square inch."

Furthermore, the '481 patent teaches that the dry cleaning composition is removed by simply draining or venting, not by extraction. (The '481 patent, column 6, lines 27-29).

In the present claimed invention, the substrates are cleaned with an organic solvent in the absence of liquid carbon dioxide. After the substrates have been cleaned, the organic solvent is drained and then extracted from the substrates by immersing the substrates in a pressurized fluid solvent, for example, liquid carbon dioxide, to extract the residual organic solvents from the substrates. Thus, the liquid carbon dioxide is used to remove the organic solvent from the substrate. Therefore, the '481 patent does not teach or suggest a method of cleaning substrates with an organic solvent in absence of liquid carbon dioxide; nor when the pressurized fluid solvent is liquid carbon dioxide it is under a pressure of between approximately 600 pounds per square inch to approximately 1050 pounds per square inch. The '481 patent specifically calling for the use of conventional surfactants in a liquid carbon dioxide dry cleaning system.

12. Additionally, since the cited references are asserted not teach all the elements of the present claimed invention, these references cannot properly be combined as the claimed invention can be distinguished over these cited references.

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13. The rejection of the claims 2-32, 34-49, and 51-56 under 35 U.S.C. §103(a) as being unpatentable over U.S. 6,280,481 to Storey-Laubach *et al.* ('481) in view of *SPIE Micromachining and Microfabrication*, Oct. 1996, to Dyck, *et al.* ("Article") is withdrawn in light of the foregoing arguments drawn to the claims as they currently appear. Especially relevant is the argument that the prior art of record requires supercritical carbon dioxide. Supercritical fluids are by definition at a temperature and pressure greater than or equal to the critical temperature and pressure of the fluid. CO₂'s critical pressure is about 1,070 pounds per square inch (psi) and critical temperature is about 31 degrees C, so supercritical applications using CO₂ typically operate at temperatures between 32 degrees C and 49 degrees C and pressures between 1,070 and 3,500 psi. Applicant is explicit that the claimed invention does NOT rely on, or claim, supercritical carbon dioxide treatment.

IIb RE: Claims 1-58 Rejected Under 35 USC §103(a) –Withdrawn

Claims 1-58 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *SPIE Micromachining and Microfabrication*, Oct. 1996, to Dyck, *et al.* ("Article") in view of U.S. 6,090,771 to Burt *et al.* Applicants have persuasively distinguished the present invention from the prior art of record. Of particular consequence is the argument that the prior art will not work with the subcritical liquid of the present invention.

Claim Rejections – 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

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such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claim 1-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 5,370,742 ('742) to Mitchell and United States Patent No. 5,683,977 ('977) to Jureller et al.

15. The '742 reference discloses the steps of contacting a substrate (fabric) with *inter alia* an organic solvent. Thereafter the organic solvent is removed with the aid of liquid carbon dioxide the pressure is disclosed to range between 65 and 75 atm. The '742 reference explicitly states that if the organic solvent are added to the bulk solution of densified carbon dioxide the stain removal process can be impeded. See e.g. column 4, line *et seq.* What is apparently not explicitly disclosed are all the claimed solvents, which are extracted with the carbon dioxide. The '997 reference discloses the various silo/organic solvents currently claimed. See specifically columns 5-16. The artisan would have motivated to make the instant combination for the reasons explicitly set forth is '742, namely to avoid impeding the cleaning action. It is noted that he solvents would be selected for the reasons set forth as well, namely their compatibility with liquid carbon dioxide. Absent such compatibility the organic solvents are disclosed to potentially adhere to the substrate.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. Claims 1-58 are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent No. 5,866,005 ('005) to DeSimone et al. It is noted that claim 1 is drawn to a process for cleaning substrates comprising cleaning the substrate with an organic solvent, in the absence of carbon dioxide and then removing the organic solvent with liquid carbon dioxide. The '005 reference, at column 1, line 20 *et seq.*, discloses that prior art systems used liquid carbon dioxide to remove oils from substrates. The oil, even if not intended as cleaners would have the effect of dissolving oil soluble matter, and the subsequent dissolution of the oil in liquid carbon dioxide would thus remove the oil, lacking here is the specific disclosure of the organic solvent. At column 3, line 19-41 '005 discloses *inter alia* the diethyl ether of the present invention, and goes on to state "the co-solvent or modifier can be used prior to, during, or after the substrate is contacted by the carbon dioxide fluid. Columns 3 through 18 disclose the various organic/silo-organic solvents.

Conclusion

17. Applicant is strongly encouraged to consider what elements are critical to the invention and include only the critical elements in at least one dependant claim so that allowable subject matter may potentially be identified. Currently, the general organic solvents are recited in the prior art of record, as is the sequence of removing the (optionally organic) solvent with liquid carbon dioxide after the solvent has performed its cleaning operation. Limiting the claims to a specific solvent, and a specific substrate is strongly advised. Additionally, as indicated above, applicant is invited to contact this examiner if such a contact might hasten the identification of allowable subject matter. If the claims remain in substantially their current form, and applicant

does not advance arguments showing the error of this Office action or some other indicia of patentability, applicant may find that a final rejection will issue, after which applicant may be precluded from amending the claims if such an amendment necessitates an additional search.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gentle E. Winter whose telephone number is (703) 305-3403.

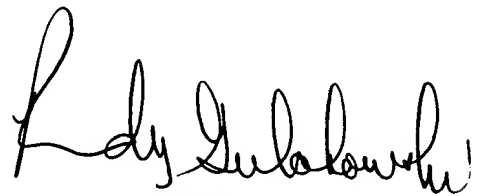
The examiner can normally be reached on Monday-Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on (703) 308-4333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Gentle E. Winter
Examiner
Art Unit 1746

January 23, 2003



RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700